Tablet-Based Mobile GIS Approaches to Archaeological Data Collection in Armenia

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ARchaeology And Geography of Ancient Transcaucasian States
Project ArAGATS
Վրաստանի Անդրկովկասյան Պետությունների Հնագիտություն և Աշխարհագրություն

ARISC
American Research Institute of the South Caucasus

Tablet-Based Mobile GIS Approaches to Archaeological Data Collection in Armenia

1. mobile GIS in archaeology
2. Research problem: Late Bronze Age fortified landscapes in the South Caucasus
3. mobile GIS solutions for site survey in Armenia

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    b. fancy Trimble DGPS and mobile GIS software, e.g., ArcPad (>$5000)

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1. mobile GIS in archaeology
    a. move toward "paperless archaeology"
    b. fancy Trimble DGPS and mobile GIS software, e.g., ArcPad (>$5000)
    c. tablet-based mobile GIS (<$1000)
        i) built-in GPS (~5m), compass, network connection, GIS apps
            a) Google Earth
            b) Collector for ArcGIS (ESRI)

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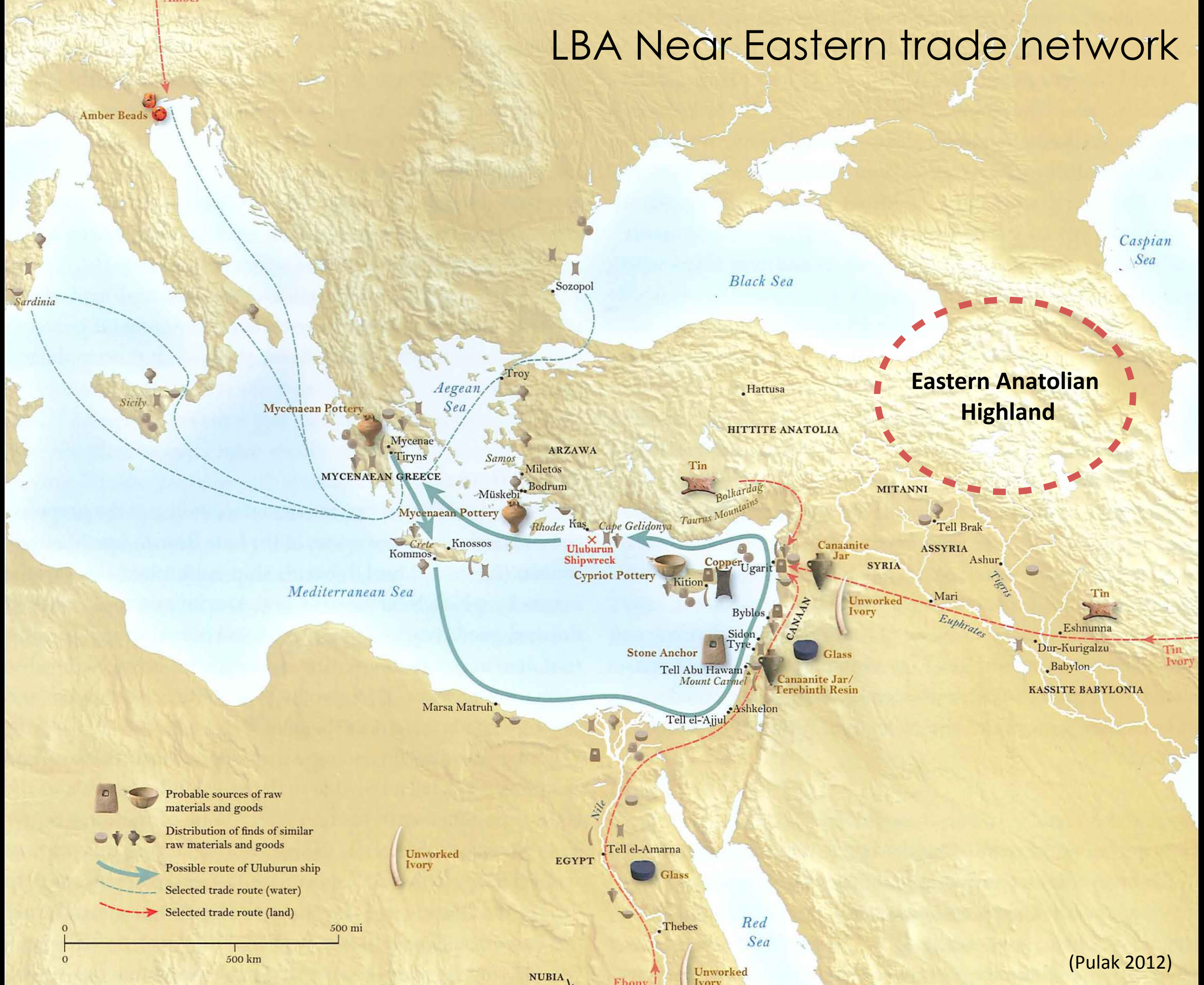
Eastern Anatolian Highland

MESOPOTAMIA *c.* 1200 BC
(Late Bronze Age)

LBA Near Eastern trade network



(Pulak 2012)

Black Sea

Caspian Sea

GREAT CAUCASUS RANGE

PONTIC RANGE

ANTI-TAURUS MOUNTAINS

Kura River

Araxes River

Tigris River

Euphrates River

Mt. Aragats

Mt. Ararat

Select LBA/Iron 1 Forts on Eastern Anatolian Highland

0 125 250 km

1:5,000,000

DEM data: SRTM 90
Modern borders: ESRI World Data 2004

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Project ArAGATS
March 15, 2014

LBA/Iron 1 Fortresses

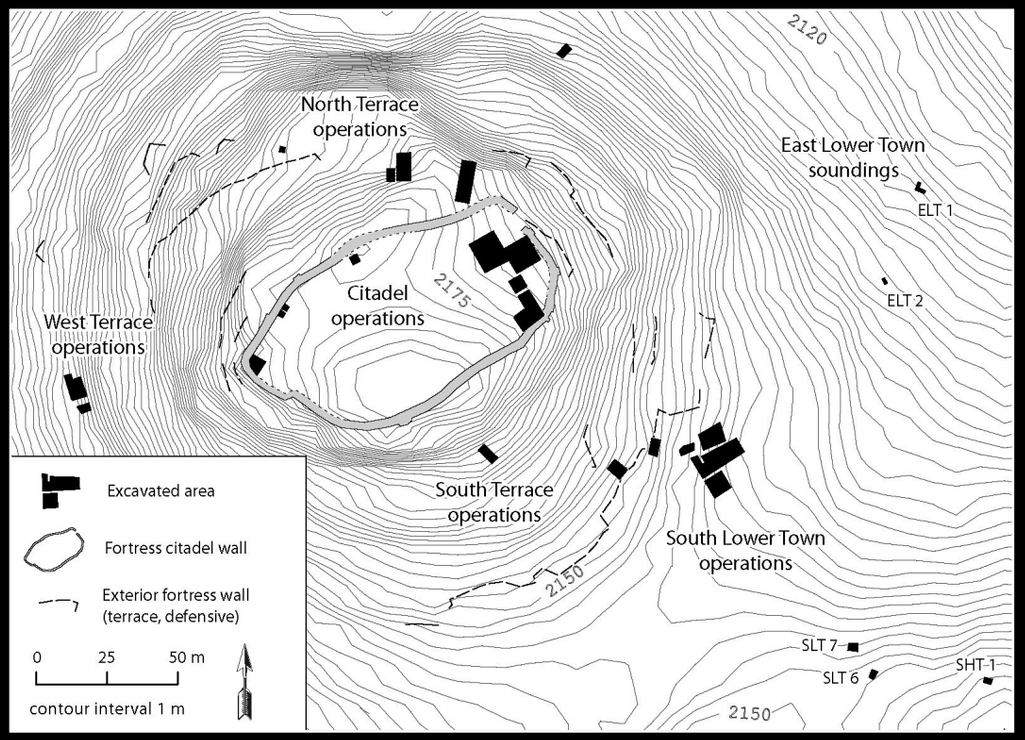
Böyük Qaleh, northwest Iran (Biscione 2009)

Horom, Shirak Plain, Armenia

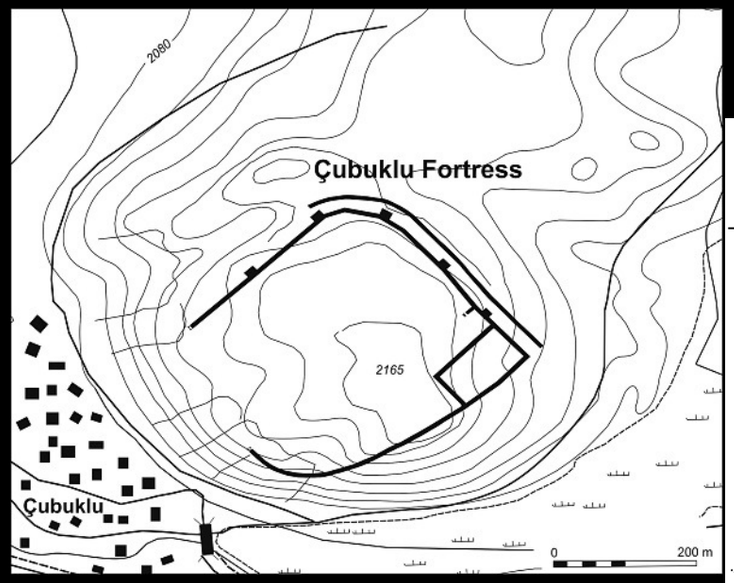
Tsaghkahovit, Tsaghkahovit Plain, Armenia

Aliler Kale, Van basin, Turkey (Sevin 2004)

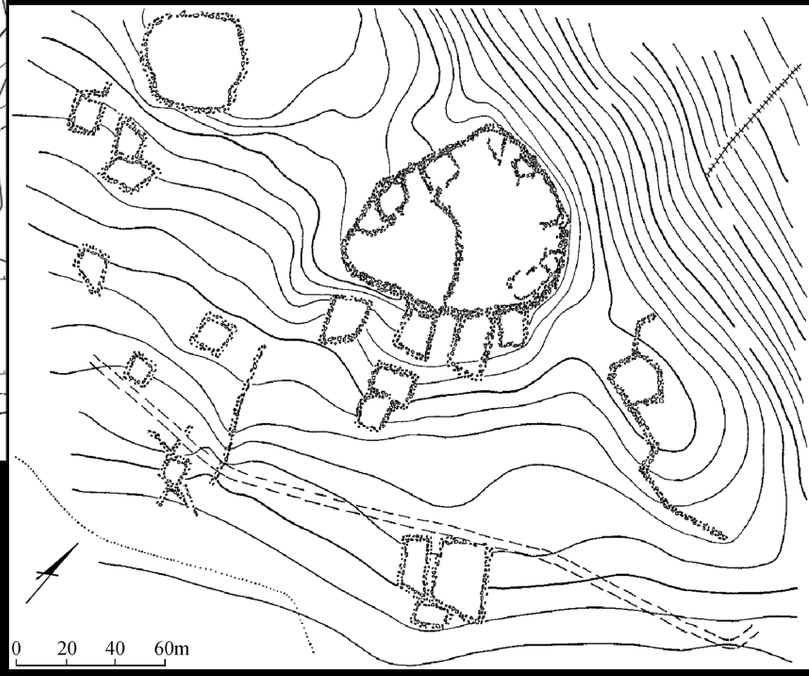
LBA/Iron 1 Fortresses



Tsaghkahovit, Tsaghkahovit plain, Armenia (Lindsay 2011)



Çubuklu, Van basin, Turkey (Özfirat 2009)



Knole, Georgia (Shanshashvili and Narimanishvili 2012)

Çubuklu, Van basin, Turkey (Özfirat 2009)

Voskevaz, Ararat Valley, Armenia

LBA/Iron 1 Metalwork

South Caucasus

Artik

Artik

Lchashen

Sevan

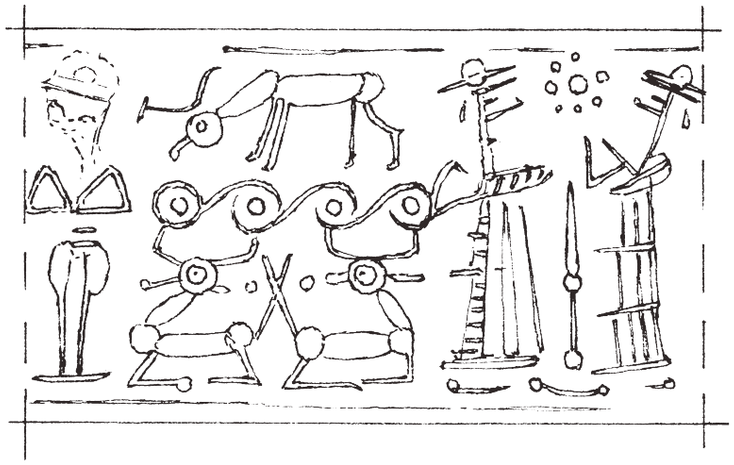
Tolors

Lchashen

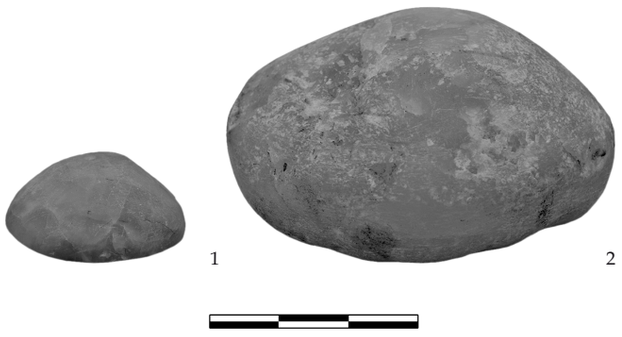
Lchashen

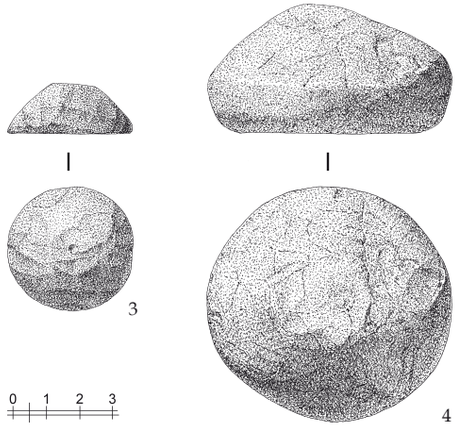
Lchashen

Material culture from Gegharot shrines



Mitannian cylinder seal





Domed balance weights

Metallurgical production

Textile production

Gegharot fortress shrine complexes

West Citadel Shrine

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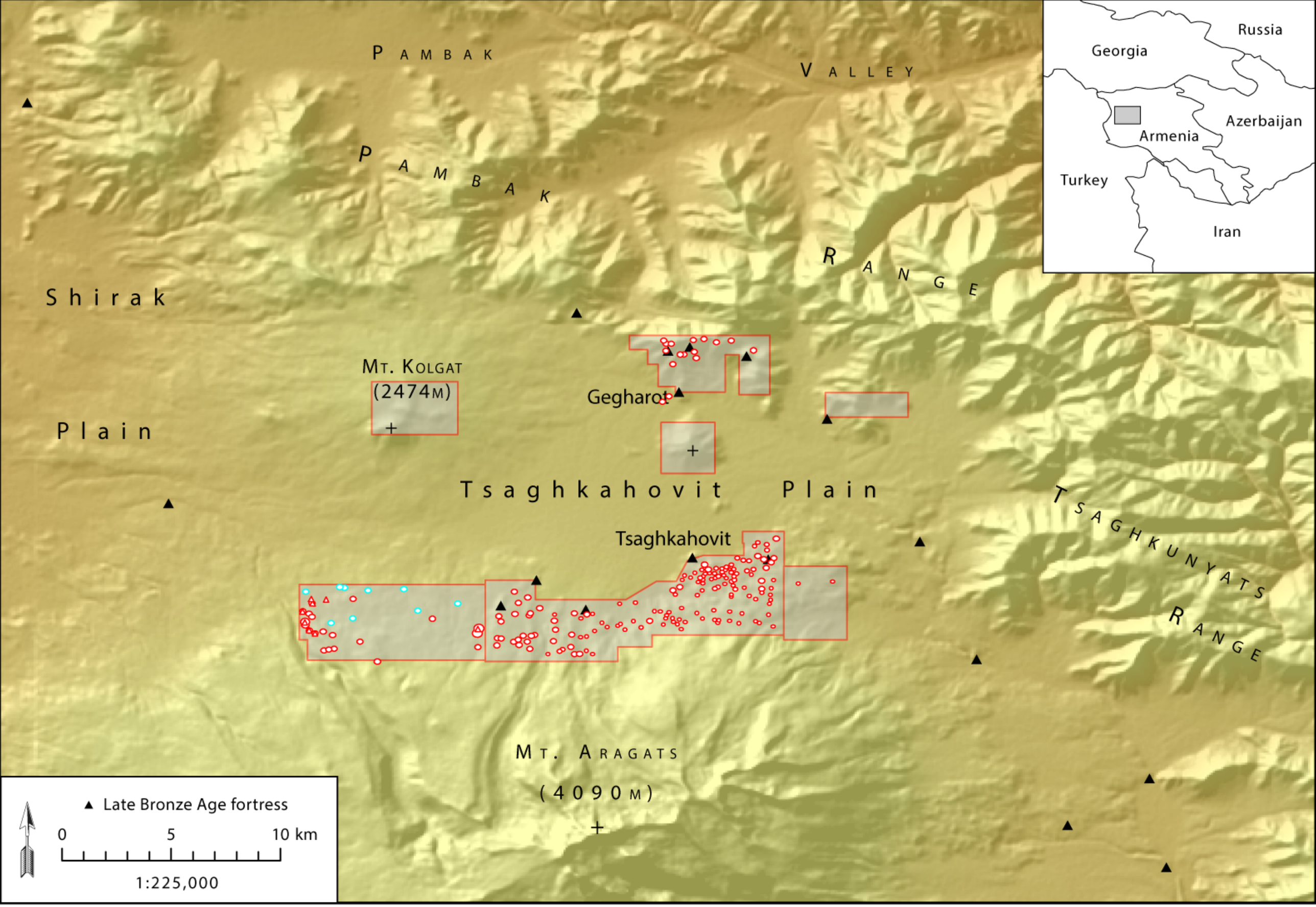
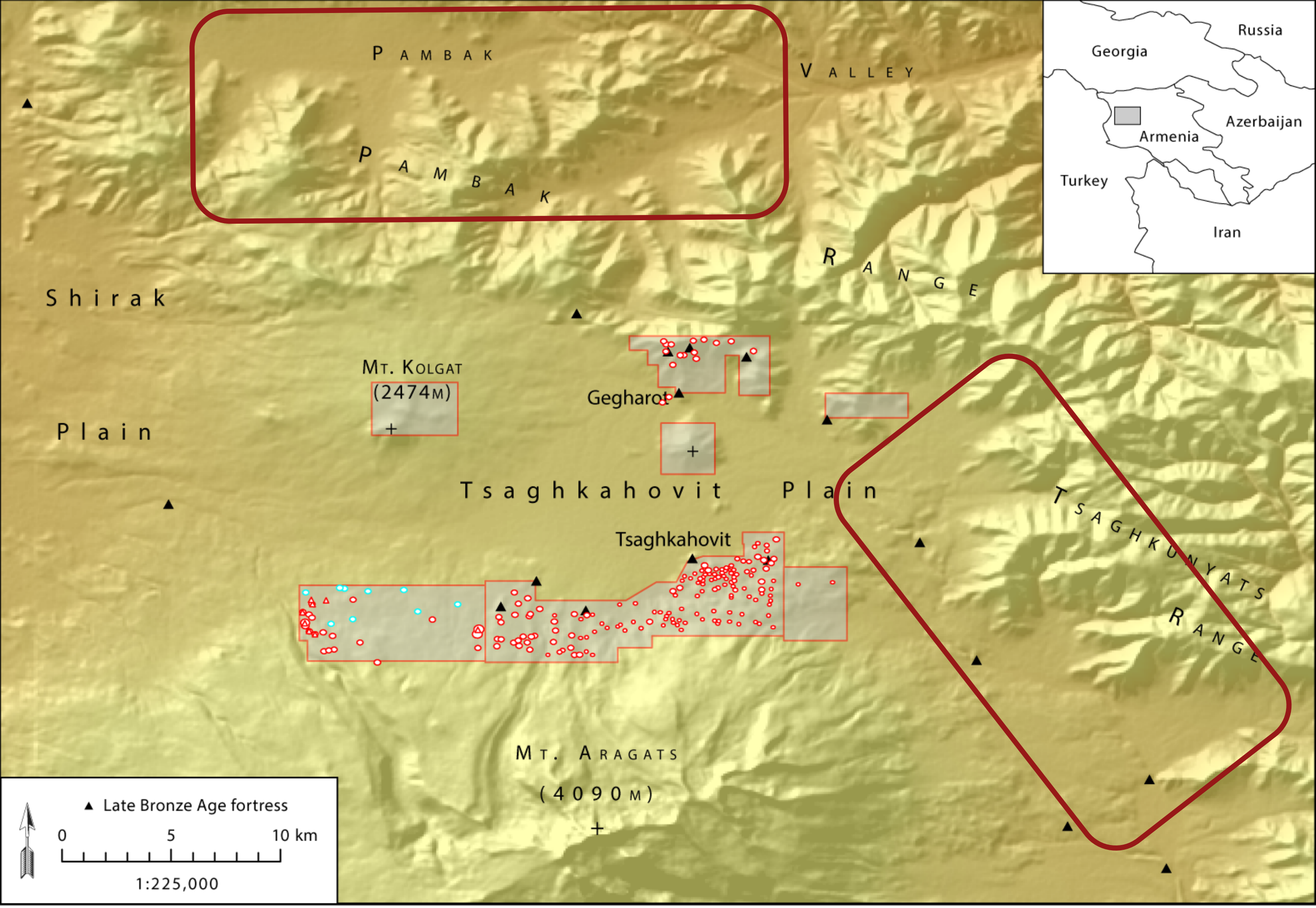


1998/2000 Site survey using handheld GPS, notebooks



2015-16 proposed survey areas

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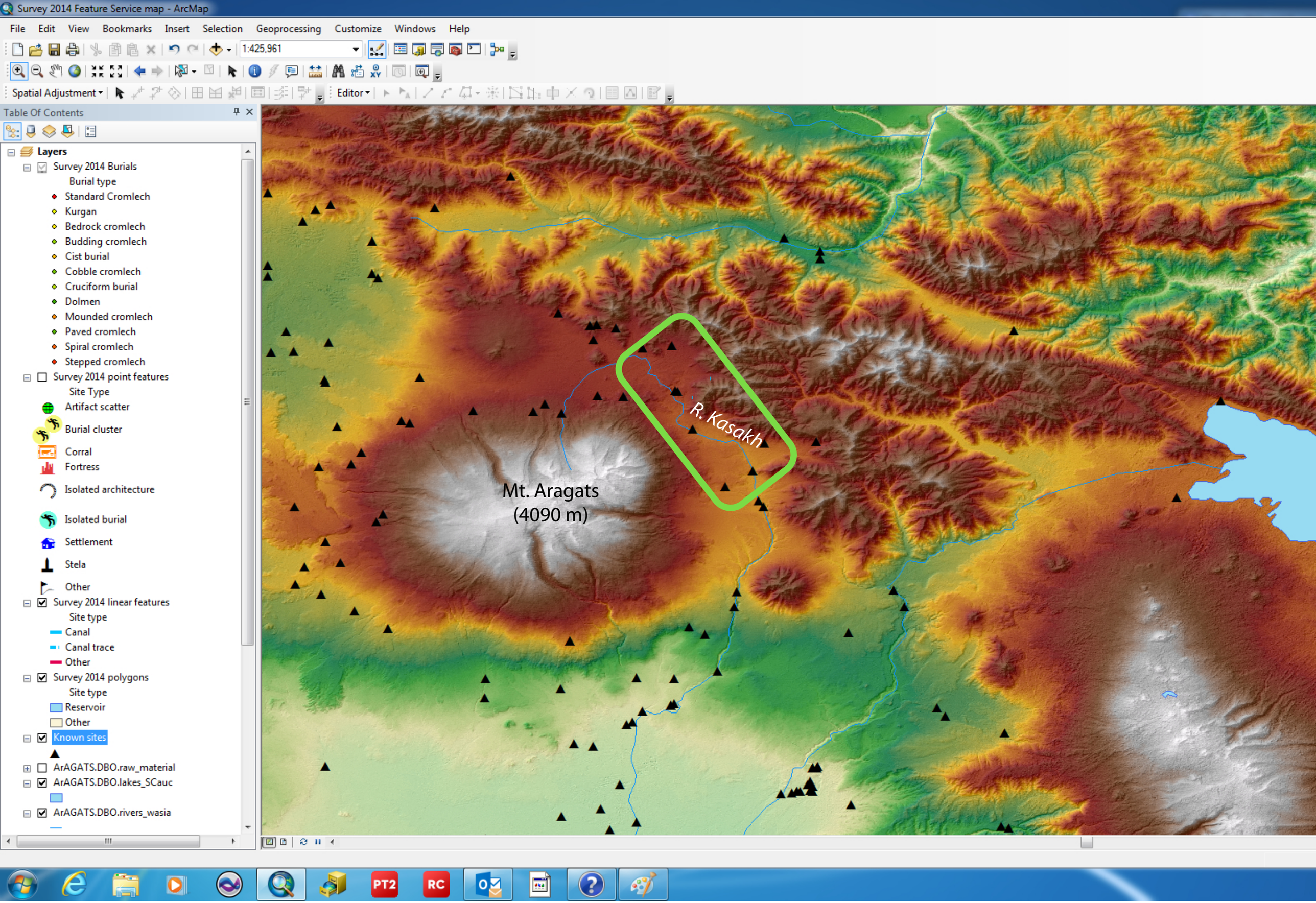
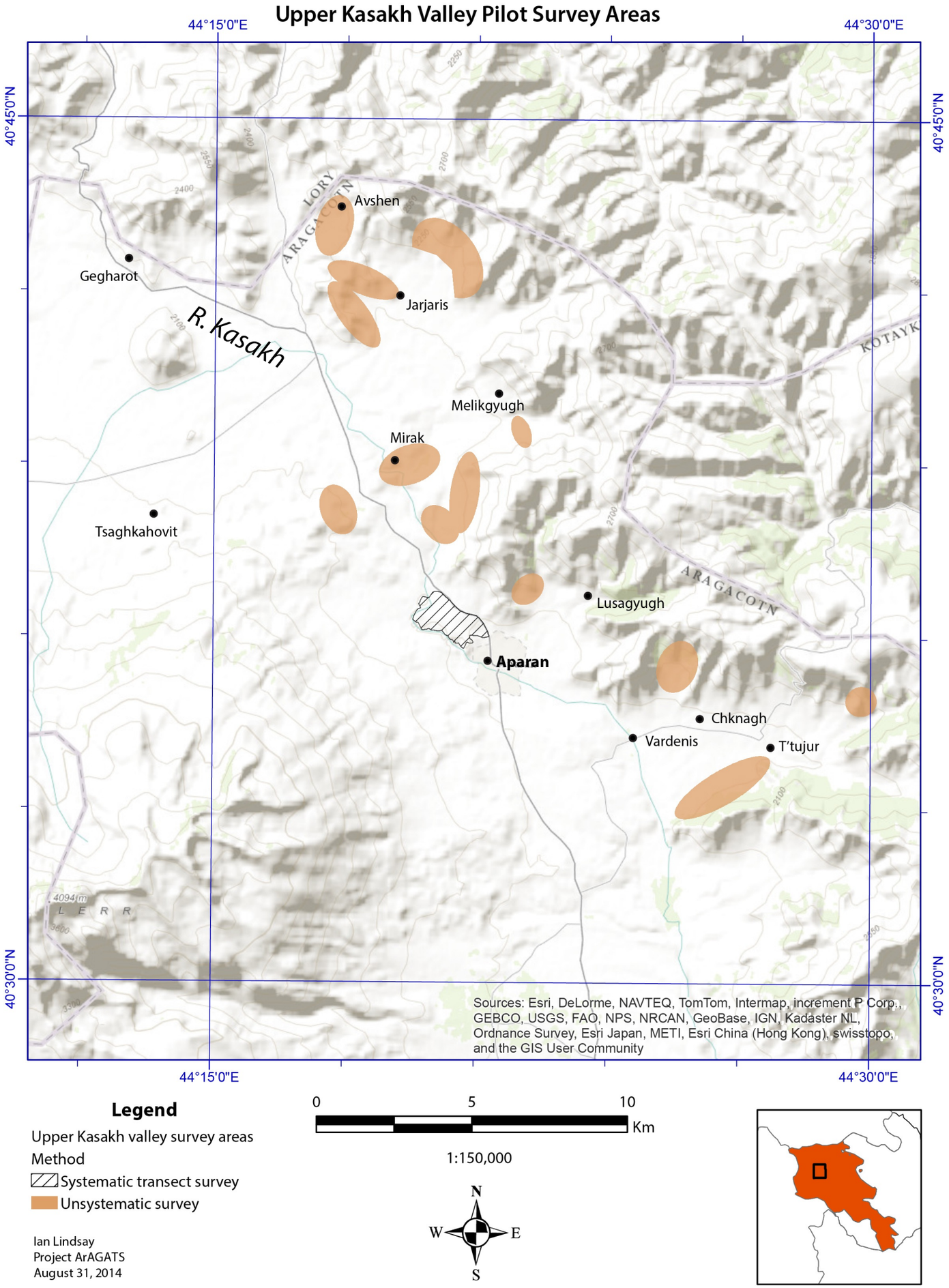
    a. field needs from mobile GIS system:
        i. efficient
        ii. collaborative
        iii. affordable

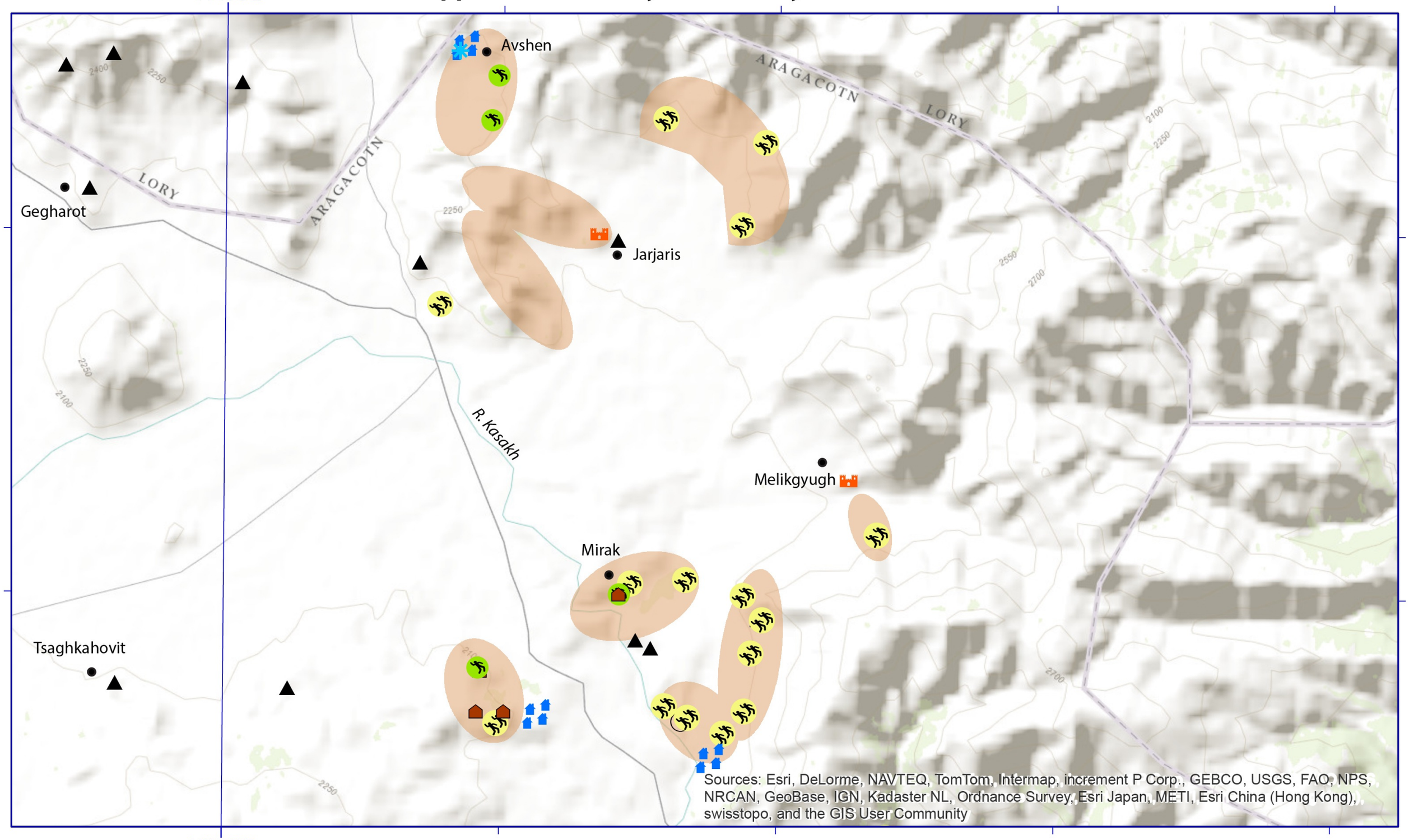


Formatting feature templates, publishing feature service in preparation for use with Collector for ArcGIS app



"Virtual survey" using Bing & Google aerial imagery and ground-truthing potential sites

Upper Kasakh Valley Pilot Survey: Northern Sector



Legend

Site types recorded

- Artifact scatter
- Burial cluster
- Isolated burial
- Fortress
- Isolated architecture
- Settlement
- Corral
- Known sites

0 2 4 Km

1:80,000

N W E S

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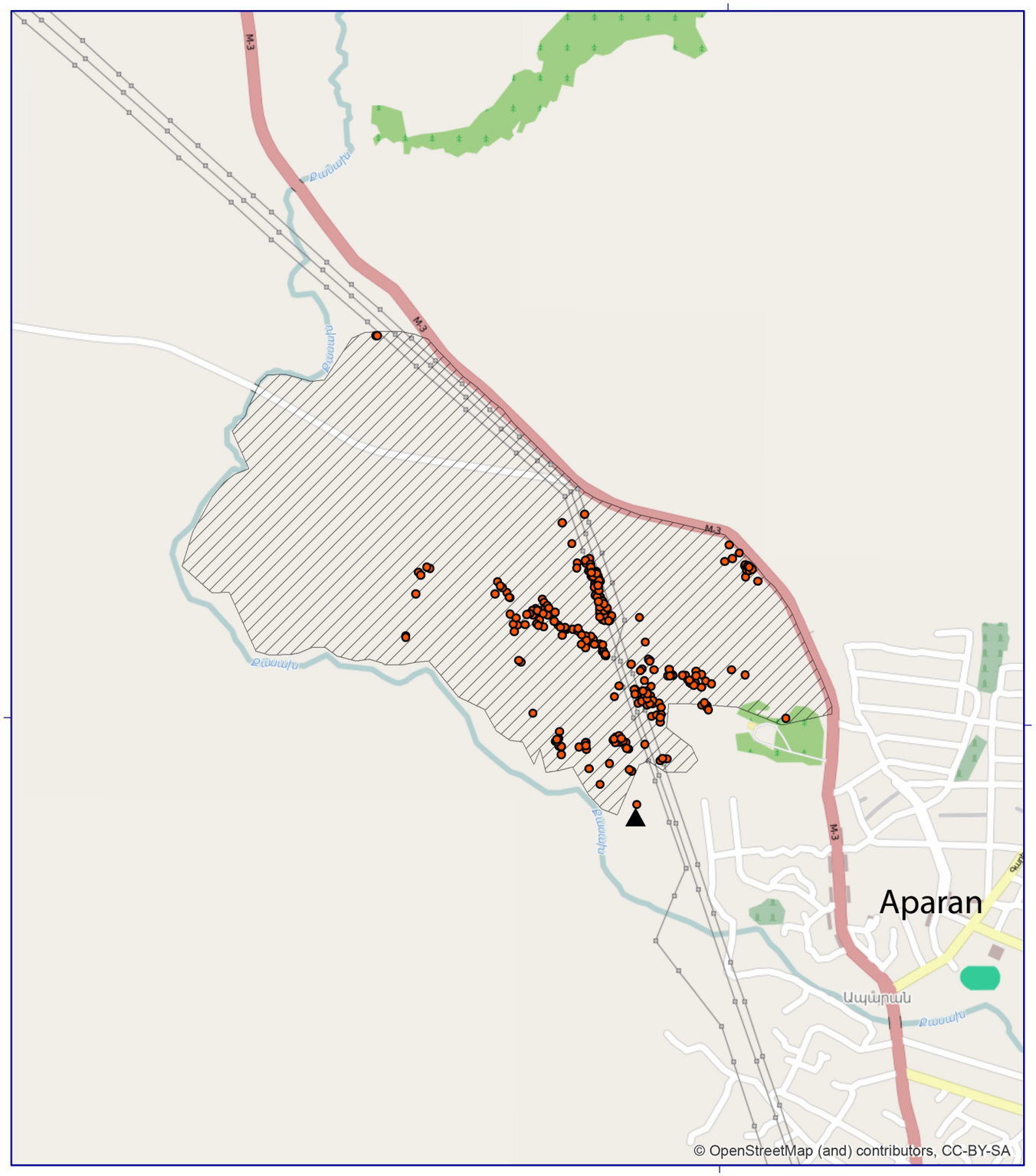
Project ArAGATS
August 31, 2014

Large burial fields
recording rate: ~50 tombs/person/hr



Pilot transect survey to examine site densities around LBA fortress

- 2.2 km^2 sample survey area
- 283 burials (~130 tombs/km^2)

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Field results from pilot survey using iPads and ESRI's Collector for ArcGIS app:

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    d. can record transects to test sampling strategy

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   c. iOS and Android compatible

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    c. Collector app is free

Thank You

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Larry Biehl, ITaP

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